which corresponds to "low level", "medium level", or "high level" indications. In some embodiments, apparatus **10** includes a label that illustrates the color-coding scheme, and an operator may compare the resulting color in window **36** with the label. In other embodiments, the color change cannot be detected with a human eye, and a machine or electronic reader, such as a spectrometer, is used to detect the color change. In alternate embodiments, other testing devices may be used. For example, apparatus **10** may incorporate a testing device whose indicium of a test result is characterized by a pH change, or some other change in the characteristic of the medium being analyzed.

[0060] After second fluid **25** and the result of the reagent/analyte reaction flow into third fluid reservoir **28**, second fluid **25** and the result of the reagent/analyte reaction flow into channel **32** and contact testing device **30**. After sufficient time to allow any remaining reagent (i.e., the reagent that has not reacted with the analyte) to react with testing device **30**, a user may read the test result in window **36**. The reaction time depends upon many factors, including the type of analyte and/or reagent. In the exemplary embodiment, the colorimetric sensor (i.e., testing device **30**) is viewable through window **36**. An operator (or machine) may then read a test result through window **36**. Alternatively, window **36** may be positioned anywhere on apparatus **10**.

[0061] FIG. **3** is a side view of apparatus **10**, where valve **14** has been removed. First pathway **17** is positioned between first housing segment **16** and central housing segment **15**; second pathway **19** is positioned between second housing segment **18** and central housing segment **15**; third pathway **21** is positioned between third housing segment **20** and central housing segment **15**; and fourth pathway **23** is positioned between fourth housing segment **22** and central housing segment **15**. Each pathway **17**, **19**, **20**, and **21** fluidically connects its respective housing segment **16**, **18**, **20**, and **22** with central housing segment **15**. Valve **14** (shown in FIG. **1**) may be used to selectively close off any one of pathways **17**, **19**, **20**, and **21**.

[0062] In FIG. **3**, frame **12** has a valve mounting feature **38** (such as an opening or mounting knob) for mounting valve **14** to frame **12**. Valve **14** includes a feature that corresponds to the shape and size of feature **38** and valve **14** and knob **38** mate in order to attach valve **14** to frame **12**. As seen in FIGS. **6**B and **6**C, valve **14** includes or is attached to rotate around a shaft **45** which extends from a back side **47** of frame **12**. A stiffening washer **49** is also provided on back side **47** of frame **12**. Washer **49** is sized to extend opposite the sealing portions of valve **14** (e.g., actuating ribs **4**) to further stiffen the frame **12** adjacent flow restrictor locations **117**, **119**, **121** and **123** and aid in forming uniform seal forces. Washer **49** may be formed from a suitable stiffener such as cardboard, plastic (e.g., polyearbonate) or metal. A fastener (not shown) such as a Tinnerman style nut may be used to attach the valve **14** and shaft **45** relative to the frame **12**. Bias of valve **14** toward a top side **51** of frame **12** may be achieved by placement of a wave washer (not shown) between the Tinnerman style nut (not shown) and the washer **49**. Any suitable arrangement for rotatably mounting valve **14** to frame **12**, while biasing valve **14** towards top side **51** of frame **12**, will suffice.

[0063] Stops **40** and **42** as shown in FIG. **3** are also attached to frame **12** and project therefrom. Stops **40** and **42** help to prevent valve **14** from turning past a predetermined point. Specifically, if valve is rotated in a certain direction, stops **40** and/or **42** engage with a portion of valve **14** and prevent valve **14** from rotating further in that direction. If valve **14** had a 360-degree range of motion, an operator may unintentionally and accidentally open and close different flow paths through central housing segment **15**.

[0064] As previously mentioned, in alternate embodiments, the sample preparation position of valve **14** may comprise two or more positions. In one embodiment, valve **14** includes first and second sample preparation positions. In the first sample preparation orientation, valve **14** closes off pathways **19**, **21**, and **23** between central housing segment **15** and second, third, and fourth housing segments **18**, **20**, and **22**, respectively. This opens up flow path **17** between first housing segment **16** and central housing segment **15**. The first sample preparation position allows the eluted sample to sit within central housing segment rather than flowing directly through central housing segment **15**. An apparatus operator then has the option of releasing the eluted sample from central housing segment **15** after a sufficient time to allow capture medium **24** to capture the analyte from the eluted sample and/or for the analyte to react with a reagent. In the second sample preparation position, valve **14** closes off pathways **17**, **19**, and **23** between central housing segment **15** and first, second, and fourth housing segments **16**, **18**, and **22**, respectively. This opens up flow path **21** between third housing segment **20** and central housing segment **15**, and the eluted sample (minus the captured analyte) may be released from central housing segment **15**.

[0065] In another embodiment, which may be combined with the embodiment having two sample preparation positions, valve **14** includes first and second testing positions. In the first testing position, valve **14** closes off pathways **17**, **19**, and **21** between central housing segment **15** and first, second, and third housing segments **16**, **18**, and **20**, respectively. As a result, pathway **23** is the only open pathway from central housing segment **15**. The first testing position allows the second buffer **25** (retained in fourth housing segment **22**) to sit within central housing segment **15**. If a reagent material is disposed in fourth housing segment **22**, fourth pathway **23**, or central housing segment **15**, the option of having a first testing position allows an operator to control the amount time in which the analyte and reagent may react. In the second testing position, valve **14** closes off pathways **17**, **21**, and **23** between first, third, and fourth housing segments **16**, **20**, and **22**, respectively. Pathway **19** is then the only open pathway from central housing segment **15**, and any fluid contained within central housing segment **15** may be released to contact testing device **30**. The second testing position allows the operator to control when to allow the analyte and reagent to contact testing device **30**. Of course, in both the first and second testing positions, valve **14** does not necessarily need to close pathway **17** because if apparatus **10** is positioned so that gravity flows in direction g, fluid will not likely flow up pathway **17**.

[0066] Other valve **14** positions are also contemplated. Valve **14** positions depend upon many factors, including the number of housing segments and the type of assay being used to detect the analyte.

[0067] The present invention may also be a molded or otherwise fabricated device that includes rigid housing segments and other fluid control components. The flow paths between the central housing and housing segments may be formed of existing tubing components, which incorporate alternate valve arrangements to control fluid flow. The operation of the molded device is similar to apparatus **10** described in reference to FIGS. **1** and **2**.